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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/874,313      | 06/06/2001  | Shingo Ishimaru      | Q64849              | 6162             |

7590 05/06/2005  
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037

EXAMINER

ANGEBRANDT, MARTIN J

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1756

DATE MAILED: 05/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/874,313

Applicant(s)

ISHIMARU ET AL

Examiner

Martin J. Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1, 3 and 5-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 5-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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1. The response provided by the applicant has been read and given careful consideration. Response to the argument made by the applicant are presented after the first rejection to which they are directed. Rejections of the previous office action not repeated below are withdrawn in view of the amendment to the claims.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,3 and 5-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara et al. '756, in view of Ito JP 62-270386, Iida et al. '961, Murray et al., "Synthesis and Characterization of nearly monodisperse CdE ....", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715 and Kunugi et al. JP 62-125550.

Ichihara et al. '756 teaches phase change optical recording materials where the phase change materials are particles dispersed in a matrix, such as a polymeric resin. (6/13-46) The size of the particles may be 1-20 nm. (6/2). Other phase change recording materials, including AgInSbTe and InSeTiCo, are disclosed. (4/9-14).

Ito JP 62-270386 teaches powdered or particulate optical recording material dispersed with a organic substance to prevent flocculation/precipitation and an organic resin. Useful particulate materials include phase change recording materials such as GeTe, GaTeSe, PbTeSe, TeO<sub>x</sub>GeSn and others. (page 2/bottom left column) The chemical formula of the dispersant is disclosed in the examples.

Iida et al. '961 teach dispersal of semiconductor particles of 0.1 to 50 nm, preferably 0.5 to 30 nm in a matrix of an organic polymer or inorganic glass material. (3/9-20). Useful semiconductor materials include CdS, CdSe, CdSSe and CdTe. (2/58-66). When preparing the embodiments using a resin matrix a solution of the semiconductor particles is mixed with the resin solution and spin coated. (3/47-41). The laser used is between 310 and 890 nm. (4/1-5) The use of protective dielectric layers between the shutter layer and the substrate and/or the reflective layer is disclosed.

Murray et al., "Synthesis and Characterization of nearly monodisperse CdE ...", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715 teach methods for producing CdS, CdSe and CdTe sols of fine particles having diameters of 1.2 to 11.5 nm. (abstract). Trioctylphosphines of Te and Se were prepared and mixed with dimethylcadmium with stirring and heating at 230-260 degrees. These are isolated and purified by cooling to 60 degrees C and adding methanol to flocculate the crystals, followed by centrifugal separation. The flocculant is then re-dispersed in butanol to form a clear solution, solids removed, methanol added to remove the excess TOP and TOPO, followed by re-dispersion. The CdSe nanocrystallites can be re-dispersed in a variety of solvents including alkanes, (hexane page 8707, upper right column), aromatics, long chain alcohols, chlorinated solvents, and organic bases (amines, pyridines, furans, phosphines). (page 8707/lower left column) The CdSe nanocrystallites are disclosed as being stabilized (from agglomeration) by a coating of alkyl groups anchored to the surface by phosphineoxide/chalcogenide moieties. (pages 8708, bottom left to top right columns)

Kunugi et al. JP 62-125550 teaches the use of solgel methods to form recording layers, where the precursors include alkoxides of the elements.

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It would have been obvious to one skilled in the art to modify the process of Ichihara et al. '756 by coating the 1-20 nm AgInSbTe or InSeTiCo phase change recording media particles using the process of Ito JP 62-270386 to disperse them into the resin to remove the need for a sputtering step with the apparatus and time involved and replace it with a spin coating process including the resin and the stabilized particles as this is less equipment intensive and cheaper with a reasonable expectation of success based upon the disclosure of Iida et al. '961 that within the optical recording media art, it is known to disperse particles into polymeric matrices in this manner and further in addition to the basis provided above, the examiner holds that it would have been obvious to modify the combination of Ichihara et al. '756 with Ito JP 62-270386 and Iida et al. '961 by an analogous process to that of Murray et al., "Synthesis and Characterization of nearly monodisperse CdE ....", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715 to prepare the colloidal/particulate phase change materials with a reasonable expectation of success based upon the disclosure that trioctylphosphine prevents flocculation as does the dispersant in the Ito JP 62-270386 reference and the known use of solgel/wet processing techniques in forming phase change recording layers as evidenced by Kunugi et al. JP 62-125550.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The applicant is also incorrect that only binary systems are taught by Iida et al. as CdSSe is taught. The phase change recording layer compositions are taught by Ichihara et al. '756, Ito et al. JP 62-270386 and Maeda et al. '052. The benefit of the surface treatment is taught by Murray et al., "Synthesis and

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Charachtorization of nearly monodisperse CdE ....", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715, with support for this direction of experimentation provided by Kunugi et al. JP 62-125550. The rejection stands.

4. Claims 1,3 and 5-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ichihara et al. '756, in view of Ito JP 62-270386, Iida et al. '961, Murray et al., "Synthesis and Charachtorization of nearly monodisperse CdE ....", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715 and Kunugi et al. JP 62-125550, further in view of Maeda et al. '052.

Maeda et al. '052 teach various phase change optical recording media, including CuInTe<sub>2</sub>, AgInTe<sub>2</sub>, CuInSe<sub>2</sub> and four component alloys as well. (8/30-9/14)

In addition to the basis provided above, it would have been obvious to modify the combination of Ichihara et al. '756 with Ito JP 62-270386, Iida et al. '961, Murray et al., "Synthesis and Charachtorization of nearly monodisperse CdE ....", J. Am. Chem. Soc., Vol. 115(19) pp. 8706-8715 and Kunugi et al. JP 62-125550 by using other, similar phase change optical recording materials, such as CuInTe<sub>2</sub>, AgInTe<sub>2</sub> or CuInSe<sub>2</sub> taught by Maeda et al. '052, in place of those specifically taught in Ichihara et al. '756, Ito JP 62-270386 or Kunugi et al. JP 62-125550 with a reasonable expectation for the resulting recording medium functioning properly.

**5 THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

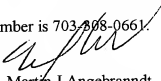
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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9309 for regular communications and 703-872-9309 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-898-0661.



Martin J Angebranndt  
Primary Examiner  
Art Unit 1756

May 4, 2005